ENGINEERING NEWS-RECORD

River control established at Friant Dam as concrete placing continues ahead of schedule

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The Week In Engineering and Construction

ENGINEERING NEWS-RECORD • MAY 15, 1941

Bullshead Dam allocated $5,000,000 as initial start on $41,200,000 job

Department of Interior gets $115,085,000 of which $77,700,000 goes to speed up Bureau of Reclamation power projects

Construction funds totalling $115,085,000 are provided in the latest appropriation bill for the Department of the Interior as reported to Congress. Biggest item is $77,700.00 for the Bureau of Reclamation. The bill provides $5,000,000 to start the $41,200,000 Bullshead power dam on the Colorado River.

For the Bonneville Power Administration, $22,858,000 is provided for additional generators at Bonneville and Grand Coulee and for transmission lines and equipment. Of $9,346,000 for the Park Service, $6,000,000 is for the Blue Ridge, Natchez Trace, and George Washington memorial parkways, and $3,000,000 is for roads and trails. Indian Affairs gets $5,180,000 for its irrigation, road, and building work.

Bullshead, Reclamation's new project, is a straight power dam with only incidental benefits to irrigation and flood control. Its entire cost will be repaid from power revenues in fifty years at 3 percent interest.

The dam is located in the Colorado River on the Arizona-Nevada line. Its 1,600,000-acre-ft. reservoir will reach 67 mi. upstream to the tailwater of Boulder Dam; it will utilize the resulting 140-ft. head to generate immediately 180,000 kw in four generators. Ultimate capacity is 225,000 kw.

The dam itself will be an earth and rockfill structure 338 ft. high, 1,350 ft. long, 60 ft. wide at the crest, and 1,400 ft. wide at the base. A cut-off trench 120 ft. wide at the bottom will be dug to bedrock, 200 ft. below the bed of the stream. Two concrete cut-off walls will be placed in the trench. The central earthfill section will be selected clay, sand, and gravel rolled in 6-in. layers. Upstream face will be paved with riprap on a 3:1 slope, while the upstream face will be rockfill on a 2:1 slope.

An open-chute spillway — gate-controlled and concrete-lined—will be cut into the East abutment and will discharge 400 ft. below the dam. It will have a capacity of 200,000 sec.ft.

During construction, the river will be diverted through six tunnels in the West abutment. One of these, concrete-lined and 32 ft. in diameter, will later contain a valve-controlled steel pipe for by-passing the generators. The other five tunnels will be unlined and 29 ft. in diameter. Steel penstocks will later be placed in these and then back-filled with concrete.

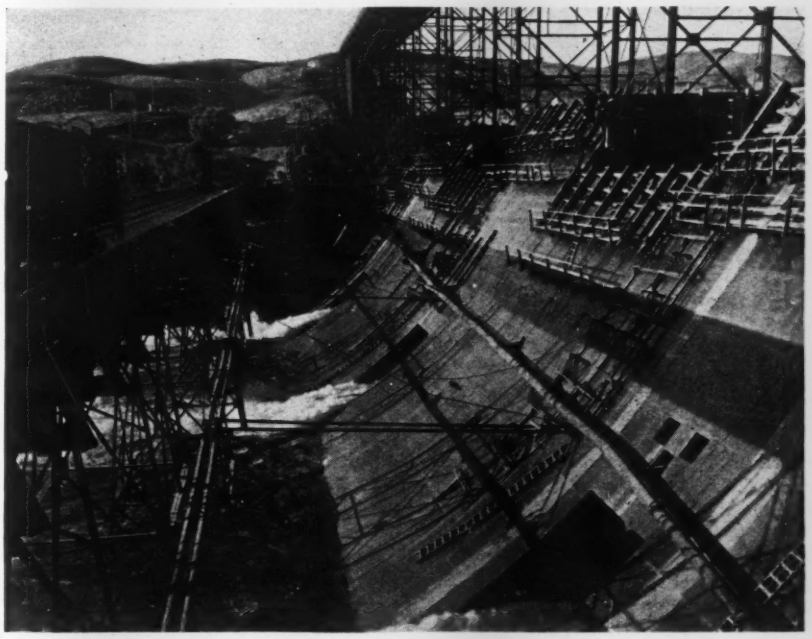
Of the $41,200,000 cost of the project, $21,000,000 will be for the dam and reservoir proper, $15,500,000 for the powerhouse, and the remainder for electrical equipment.

Defense housing trend continues upward

Allocations for construction with public funds of 9,825 defense homes under the coordinated housing program, week ending May 3, has just been announced by C. F. Palmer, Coordinator of Defense Housing, which raises the number of allocations for the two-month period between March 1 and May 3 to over 15,000 units.

Allocations have now been made for 87,260 family dwelling units, of which 61,512 are for civilian workers and 25,748 for married enlisted personnel. These units are located in 144 localities of 47 states and territories.

The largest allocation made during this period was for a 5,000 unit project in the Pittsburgh area. These housing units, to be constructed by the FWA, will house steel and iron workers.



River flow now under control at Friant Dam

At Friant Dam on the San Joaquin River (Calif.) the situation as to river control is well in hand, as can be seen in this picture which shows stream flow coming through three temporary openings in the spillway section. In upper right is the "high trestle" whose steel members are rapidly being imbedded in concrete; at the left is the low-level, service trestle on which are handled all materials other than concrete. The big pipe on the face of the dam is part of the cooling water circulating system.

Millionth yard of concrete placed at Shasta Dam

Down in the canyon of the Sacramento River, 12 miles north of Redding, Calif., Shasta Dam is rapidly taking form. With a steady flow of aggregate coming in on the 9-mi. belt conveyor and 8-cu.yd. concrete buckets moving out regularly over the radial cableways, the dam is growing at the rate of about 6,000 cu.yd. of concrete per day. On May 2 a total of 1,000,000 cu.yd. had been placed, which is up to schedule. The complete structure, to contain about 6,000,000 cu.yd. of concrete, is being built by the Bureau of Reclamation, under contract to Pacific Construction, Inc., and is scheduled for completion Sept. 1, 1944.

Florida senate passes $52,000,000 highway bill

The Florida Senate last week passed a bill authorizing the state to construct a $52,000,000 toll superhighway from Jacksonville to Miami with a branch to Tampa. Likewise the bill would empower the state to operate and acquire Gandy bridge, Davis causeway, the proposed Pinellas-Manatee tunnel (see *ENR*, Apr. 17, 1941, Vol. p-574) and similar projects.

The bill would authorize creation of the Florida Improvement Commission, composed of the governor, the chairman of the state road department and three members to be named by the governor, to borrow funds—construct, acquire and operate any public works project which would be self liquidating.

The measure has the approval of the house finance and tax committee and endorsement of administration leaders.

Tacoma council approves power expansion program

The City Council of Tacoma, Wash. has approved an enabling ordinance to clear the way for an $11,000,000 city power expansion and construction project on the Nisqually River, with the understanding that plans will be halted if they should interfere with the national defense program. (*ENR* April 3, 1941, p. 504).

The project calls for construction of a 40,000 kw. generating unit as an addition to the existing Nisqually powerhouse at La Grande; a concrete diversion dam 275 ft. high on the Nisqually River, with tunnels and pressure pipes extending 7,200 ft. to the present powerhouse; a concrete impounding dam 300 ft. high on the Nisqually River, 4 miles upstream from the existing powerhouse and a powerhouse of 50,000 kw. capacity below the dam.

Change order will speed concreting at Shasta Dam

Thus far specifications for Shasta Dam have stipulated 175 ft. as the maximum difference in elevation between concrete in the abutments and spillway sections and also that there shall be at least a 15-ft. differential in level between surfaces of adjacent concrete blocks. It has been the practice to place a 2-in. layer of damp sand on the surface of each 5-ft. lift and remove it just prior to placing the next lift. Modifications in these requirements by a change order now under consideration by the U. S. Bureau of Reclamation are expected to materially expedite the work.

The long belt conveyor for moving aggregate from Redding to the site, which was designed for 1,100 tons per hour, has delivered as much as 1,500 tons per hour. It easily averages 1,100 tons per hour through the 8 hr. of a shift on any of the five grades of material. Some rock breakage occurred for a time at transfer points but this has been eliminated by use of baffles to decrease the height of free fall. The price paid the contractor by the government for aggregates of all grades is 39.88c. per ton at the gravel plant. To this is added a belt-delivery charge per ton at three rates: 26½c. for the first 2,420,000 tons, then 17.94c. until the tonnage reaches 10,000,000 and thereafter 18.94c. per ton.

Despite a two-month delay on power house foundation work caused by winter floods, the structure is expected to be ready for installation of generating machinery by the latter part of August. (Turbine contracts for four 100,000-hp. units held by Allis-Chalmers Co., call for delivery of the first unit in July).

On the relocation of the railroad around Shasta reservoir, track work was held up almost 6 mo. last year by a strike and is hence behind schedule. The tall concrete piers for the Pit River bridge are now nearing completion. Although steel erection on this structure has been delayed somewhat by a scarcity of steel workers (overtime makes defense jobs more attractive) the two first truss spans on the south end have been completed.

Delay in completion of the railroad prevents delivery of steel to the north end of the bridge and it is as yet uncertain whether the railroad can be moved out of the canyon to the new location by Sept. 1, 1941 as planned.

The Central Valley Project as a whole (of which Shasta reservoir is the key unit) is now estimated to cost a total of $228,010,000. Up to the first of April, 1941, the total of Federal funds made available was $73,200,000; an additional $25,000,000 is set up in the budgets which are now under consideration; contracts completed or now under way total about $85,000,000.

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National and state highway outlook presented to Illinois road builders

Breakdown of the Federal government's $287,000,000 defense highway program given by Congressman Wilburn N. Cartwright

Importance of highway construction and modernization to national defense was stressed at the spring meeting of the Illinois Road Builders Association, held at Chicago on May 6.

The road builders were told that there is no time for a road building holiday during the present emergency if highways are to be put in shape to handle the huge transportation volume resulting from the armament program. It was indicated that highways vital to defense needs will get priority nationally and in Illinois during 1941, and that there is a good chance for a start on the Chicago superhighway program.

Federal road plans were reported on by Congressman Wilburn N. Cartwright of Oklahoma, chairman of the House Road Committee, in a long distance telephone statement amplified so that all present heard the congressman's voice. He announced that $8,390,741 in unobligated federal appropriations for Illinois roads is available as soon as projects are initiated by the state. Several additional millions will also become available for use on Illinois roads as soon as the government's $287,000,000 defense highway building program is passed by Congress, Mr. Cartwright said. He predicted that details which have been holding up submission of the federal program to Congress will soon be ironed out and that Congress will act on it speedily and favorably as soon as it has the chance.

The congressman informed the road builders that proposed allocations of the $287,000,000 include: $25,000,000 for tactical roads for army and navy maneuvers and $150,000,000 for access roads for defense projects, the full cost of which will be borne by the government. A third category is $100,000,000 for improvement of the so-called strategic network of main highways, in which federal money will be matched by state appropriations on the basis of 60 percent federal and 40 percent state.

The bill also contemplates $12,000,000 for advance planning for additional work needed on the strategic highways, this cost to be shared equally by state governments in order to give the states an equal voice in determining what work is to be done, stated Congressman Cartwright.

The road builders heard with approval a statement by the congressman that the contract system of road building will probably be used throughout the defense highway program. This statement brought a round of spontaneous applause from the road builders. Amplifying his remarks, the congressman said, it is generally conceded by government officials that the contract system produces roads quicker, cheaper, and better.

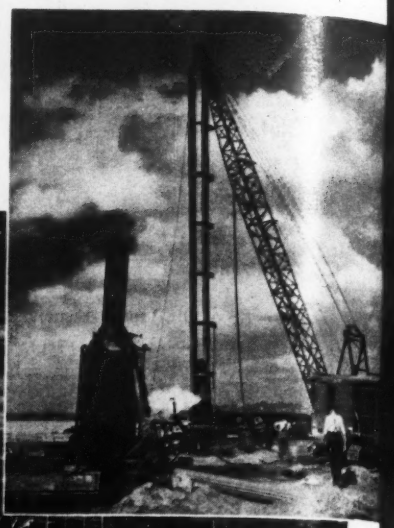
Replacement of Chicago's State Street Bridge underway

Separate foundation and superstructure contracts have been let by the City of Chicago for construction of the long-waited-for bridge over the Chicago River at North State St. This busy thoroughfare in the Chicago Loop district has been without a river crossing for three years, since the old structure was demolished to permit construction of the State St. subway across the river. After the river tunnel section of the subway was completed by the trench method last fall, start of bridge construction was delayed by trouble in obtaining right-of-way for the north approach over the Chicago & North Western Railroad yard.

The new bridge, shown in perspective in the accompanying illustration drawn by J. R. LaThomus, of the city bridge department, will include a double-leaf bascule span 245 ft. c.c. of trunnions. The deck will carry two 41-ft. separate roadways and two 13-ft. sidewalks. All foundations are Chicago well type caissons going to rock 110 ft. below river level. Caissons close to the subway structure were sunk by the subway contractor. Heavy transverse steel girders will carry the bridge piers over the subway. Cofferdams left by the subway contractor will be extended and utilized by the bridge foundation contractor.

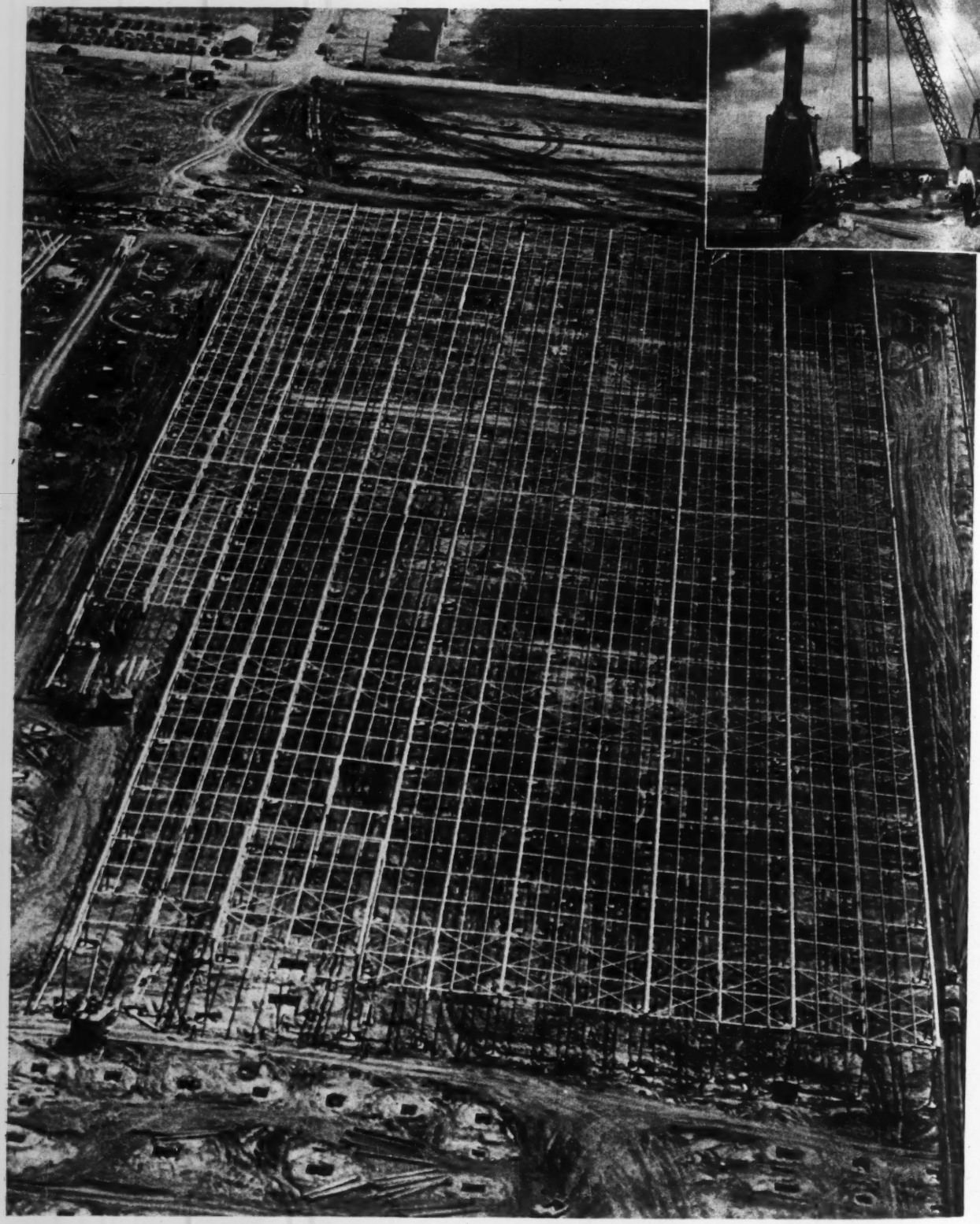
Contract for the foundations for the bridge and north approach viaduct, $490,765, is held by Fitz Simons & Connell Dredge & Dock Co., Chicago. A $1,276,848 contract for the superstructure and operating equipment has just been let to Overland Const. Co., Chicago. Fries-Walters Co., Chicago, will install all electrical work. Stephan Muchada, engineer of bridges, Chicago, is in charge of the project, under O. E. Hewitt, commissioner of public works, and W. W. DeBerard, city engineer.

Cranes fitted with swinging leads keep pile driving ahead of concrete and steel gangs.

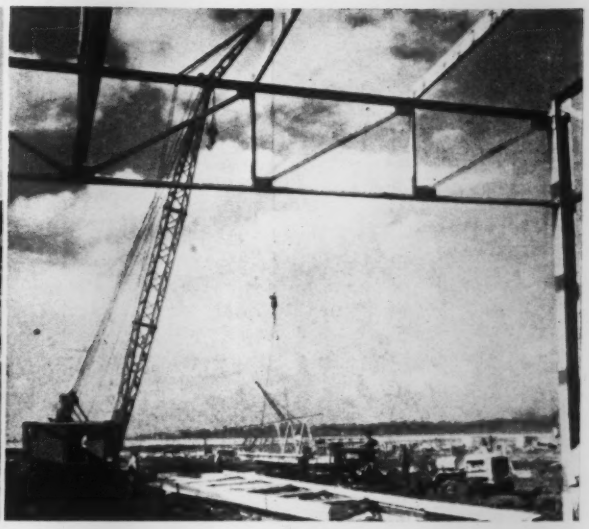


Erecting steel at Kansas City, Kan., for a 22-acre plant where bombers will be turned out for the Army.

Kansas City Star Aerial Photo



Both truck and tractor are required to deliver concrete from a central plant for mud-bound pile caps.

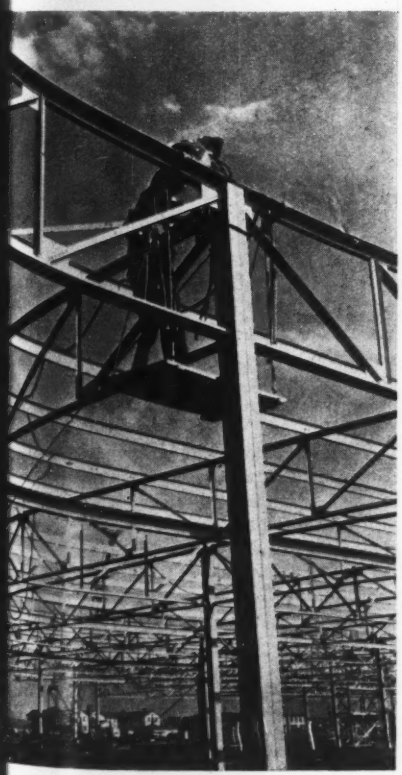


Missouri River bottom land mud calls for tractors to aid steel trucks delivering their loads.

A 22-acre bomber plant in Middle West

BEFORE the first army plane rolled off the assembly line at the huge plant of North American Aviation, Inc., at Grand Prairie, Texas, the company started work on even a larger plant for assembling bombers at Kansas City, Kans. The second plant, being built for North American by the government under the direction of the U. S. District Engineer at Kansas City, Mo., includes a main manufacturing building 901x1,052 ft. in plan to place 22 acres under one roof.

Riveting gang makes fast progress with light steelwork.



Similar in design to the Texas plant, which was described in detail in *ENR*, May 8, 1941, p. 732, it has a steel frame and is steel clad, windowless, air conditioned and fluorescent lighted. In general the column spacing is 50 ft. each way, except for a 200-ft. high bay 750 ft. long for final assembly operations. Above a concrete base 5½ ft. high the walls are cellular metal siding with 1½-in. insulation. The roof, carried by light steel trusses running in both directions, is a metal deck covered with 1½-in. insulation and built-up roofing. The floor will be concrete on a sand and gravel fill. Engineering and departmental offices, toilets and washrooms will all be located on the mezzanine, leaving the floor clear for manufacturing purposes.

Auxiliary buildings include a three-story general office building attached to the main structure, a power house, foundry, drop hammer shop, and paint storage building. The office will have smooth steel panel exterior walls, otherwise the design of the smaller buildings is similar to that of the main unit.

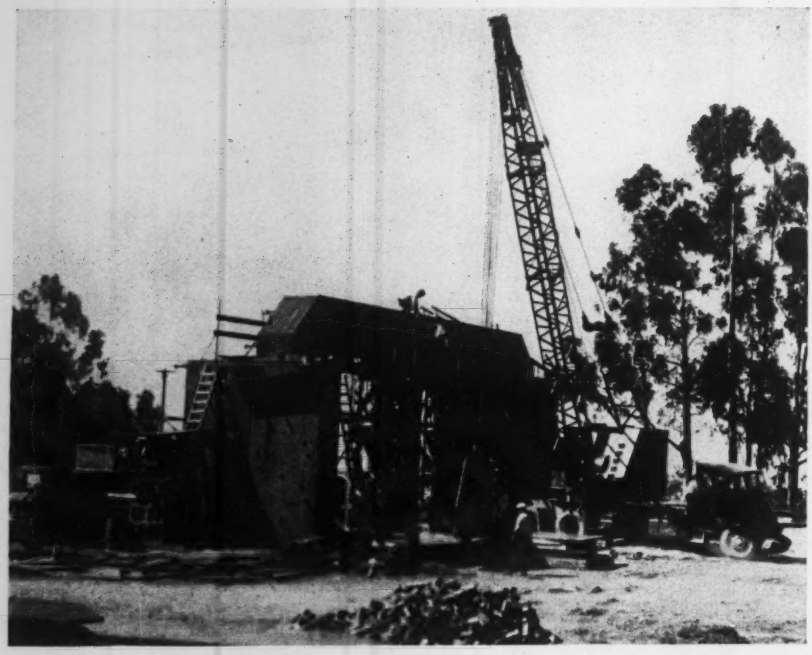
Pile foundations are required for all structures. The piles, all of fluted metal type, are driven to 40-ton bearing and a depth of from 20 to 60 ft. Usually a cluster of three piles capped with a triangular concrete cap make up the foundation for each column. The piles do not take up uniformly, and occasionally the three piles in a single group will vary as much as 20 ft. in length. They consist of a 25-ft. tapered bottom section, to which straight sections are welded to provide the necessary length.

The plant is located in the rapidly-expanding Fairfax industrial district, adjacent to the Fairfax Airport, on land protected by the new levee just completed around a bend in the Missouri River. Topsoil was removed by scrapers and an elevating grader outfit, but no general excavation was required on the flat tract. Pits for the pile caps are dug by hand ahead of pile driving, and the piles are driven by five crane and swinging-lead rigs.

The mucky Missouri River bottomland mud is a big construction handicap. Concrete for the pile caps is mixed at a central plant within the site and hauled to place in agitator trucks. During bad weather each truck is dragged by a heavy diesel tractor.

Steel is unloaded from a spur track at the site, loaded onto long trailer trucks and hauled to within reach of two long-boom erection cranes. One, and sometimes two, tractors are required to pull the steel trucks through the mud. Steel is set up at the rate of one complete 50x1,050-ft. bay per day by the two cranes. A part of the sand fill for the floor will come from the nearby old levee, now made useless by the new levee nearer the river.

The plant was designed by J. Gordon Turnbull, consulting engineer, Cleveland, Ohio. Major A. M. Neilson is U. S. District Engineer in charge; L. D. McDonald is resident engineer. The contract is held by the combined firm of MacDonald-Tarlton-Patti Const. Co., of St. Louis and Kansas City. R. E. MacDonald is project manager for the contractors.



Placing 13½-ton steel plates on California cyclotron

The cyclotron for "smashing atoms", being erected on a hill behind the University of California, at Berkeley involves the assembly of some 4,500 tons of steel in a record size magnet. After completion of the magnet, the housing structure will be built up around it. In the picture a 20-ton crane is placing 13½-ton steel plates in the top of horizontal portion of the magnet, a member made up of laminations first bolted up and then welded together.

No labor shortage seen by Social Security Board

Ample supplies of construction labor were available at the beginning of this month according to the federal Social Security Board. The board reports monthly on labor supply in trades considered important to the defense program. Its figures include nineteen construction trades; in all of these trades, more men were listed on the rolls of the U. S. Employment Service than were required to fill job openings. Biggest surplus was in carpenters, with about 76,000 more listed than are needed to fill jobs available. Nearest to a shortage are steel framework connectors, with 87 job openings and 108 men on the rolls. There were 51 jobs for hand riveters and 151 men to fill them.

When the seasonal upturn in construction develops, the Social Security Board anticipates there may be local stringencies requiring considerable clearance among local employment offices, but no shortages are anticipated on a national scale.

In the professional field too, the Board finds 1,400 men seeking work and only 216 jobs available. Similiar situations prevail as to construction, map, and topographical draftsmen and construction cost estimators.

Employment on Army and Navy construction reached its peak last February, when 700,000 men were employed. It is now down to about 550,000. The cantonment program is about 90 percent finished, but increasing plant construction should hold this employment figure about constant for the next few months, or until a second cantonment program is started.

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Access roads started in army training area

As plans are being developed for the most intensive peace-time army maneuvers ever held, an immediate start was ordered May 6 on a $2,616,049 program of construction of access roads to training areas and firing centers.

Accomplishing a smooth flow of military traffic to and from all training areas during the maneuver periods with the least possible interference to ordinary civilian traffic has been the aim of War Department officials in the development of the program.

In addition to the specific allotments provided in the part of the program announced, $436,008 has been set aside for contingencies in connection with the construction. Further authorizations will be made by the War Department, it is understood, in the near future.

Rochester water pollution affected 34,000 persons

The Health Bureau of Rochester, N. Y., has just announced that 34,000 persons were made ill as a result of accidental pollution of Rochester's principal water supply on Dec. 11 and 12, 1940 (*ENR—Dec.* 19, 1940. Vol. p. 805).

Data collected by city health nurses in a cross-section series of surveys covered illness between Dec. 12 and Dec. 18, and the information was assembled co-operatively by Dr. Arthur M. Johnson, city health officer, and Dr. Paul D. Lembcke, Rochester district health officer for the State of New York.

Nurses questioned 4,115 persons in 796 representative families residing in 52 public and parochial school districts served by Hemlock water, the potable supply contaminated when a workman opened a cross connection admitting untreated Genesee River water.

On the basis of answers given shortly after the pollution, Dr. Johnson and Lembcke estimated that 30,000 city residents developed gastroenteritis in 72 hours after drinking the polluted water. Another 4,000 was added to the list among inhabitants of outlying Monroe county towns. Six cases of typhoid were listed, but no fatalities were reported, nor did any one effected become a chronic carrier.

• • •

Grand Coulee suit will be heard at San Francisco

The three-year-old, $5,000,000 claims suit against the government by Mason-Walsh-Atkinson-Kier Co., contractors for Grand Coulee Dam foundations, originally scheduled to be heard at Grand Coulee on May 12, has been transferred to San Francisco where the U. S. Court of Claims will re-hear the case on May 15.

The contractors claim they performed work in excess of contract specifications and that the U. S. Bureau of Reclamation's inspection was too rigid. Thirty-one separate causes of action are listed by the contractors.

The contracting company was forced to re-institute proceedings after the Court of Claims sustained a government demurrer January 8, 1940, and dismissed the petition of the company to obtain judgment against the government for $5,267,273.

After all evidence has been heard at San Francisco, and also at Grand Coulee, the case will then be ready for argument in the United States Court of Claims, composed of five judges sitting at Washington, D. C., which will render the final decision. It is not expected that the verdict will be handed down before next year.

War problems hold spotlight as New York engineers meet

Over 1,000 gather to hear of civil defense and plans for a three billion dollar post-war program to prevent another depression

Due to the attention given national defense and its related problems, the 14th annual meeting of the New York State Society of Professional Engineers at New York City May 8-10 was in decided contrast to those of former years. However, tunnel construction, municipal work, and various other regular public works projects received some attention. Registration totaled more than 1,000 of 1,957 active members and a three-day program instead of the usual two-day affair was followed.

In telling of "National, State and City Defense," Walter D. Binger, commissioner of borough works, Borough of Manhattan, New York City, went on record as favoring for civil defense preparation the American Society of Civil Engineers plan dividing the nation into 64 areas for delineation of passive defense. Mr. Binger is chairman of the War Department's National Technological Civil Protective Committee.

Arthur V. Sheridan, planning commissioner of New York City, described the importance Germany's modern express highways played in that nation's war successes by allowing for rapid movement of troops.

That our present big problem in the civil defense protection program is the coordination of all the many organizations involved was a view stressed by Mayor LaGuardia of New York City. Looking ahead to peace time, he told of the need and expected early approval of a $200,000,000 federal appropriation to prepare plans for a three billion dollar rehabilitation program to start as soon as the war ends. Such a program would prevent a depression, it is his belief. As president of the U. S. Conference of Mayors, he explained the plan is receiving great favor and that it would cover many fields of engineering.

As a result of action taken during the meeting, the society is to request the New York state examining board for engineers licenses to consider time spent in military training as engineering experience. Action was also started for the society to use its influence in seeing that drafted men are placed in position where their training would be of most value.

A resolution passed would result in the State of New York adopting the plane coordinate system for land surveys with the work supervised by the state department of public works in cooperation with the U. S. Coast and Geodetic Survey.

Frederick H. Zurmuhlen, now chief engineer for the George F. Driscoll & Walsh Construction Co. on the Trinidad army base, was re-elected president of the society. Hubert E. Snyder and James F. Fairman were chosen vice-presidents, while Ernest F. Fox and Patrick M. Corry were reelected financial secretary and treasurer, respectively.

. . .

Councilman pleads guilty in Detroit housing case

John F. Hamilton, former City Councilman of Detroit, and Illinois State Legislator, pleaded guilty in Recorder's Court, May 8, to charges that he sold his council vote on the $8,000,000 Herman Gardens housing project. He admitted receiving $15,000 to vote in favor of a bidder on concrete construction of the project. Sentence, which may be a maximum of ten years, was deferred. Hamilton was one of three council members indicted on charges of accepting bribes.

Topeka engineers, 100 strong, inspect construction at Fort Riley

More than 100 members of the Topeka (Kans.) Engineering Club were recently guests of the Army on an inspection trip to Fort Riley. Army officials and M. W. Watson, a member of the Long-Manhattan-Watson Co., contractors for the $14,000,000 project, conducted the tour over the camp site where construction is rapidly nearing completion.

The five men seen in the top illustration are: left to right, Z. E. Wyant and C. F. Virr, vice president and secretary respectively of the Topeka Engineering Club; Maj. Robert F. Metcalf and Maj. Ira D. S. Kelly, constructing quartermasters office, and M. W. Watson of Long-Manhattan-Watson Co., contractors.

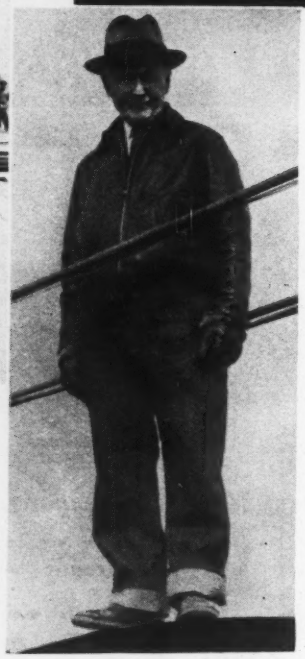
MEN at WORK

Above: Extension 1.1 miles upstream of the double-lane boulevard along the Kanawha River at Charleston, W. Va., will be an important job to this group during the summer. A beautiful sunshiny day accounts for the brief rest on a pile of lumber where the extension begins. They are, left to right, front row: LEE F. BROOKS, junior engineer, State Road Commission of West Virginia; F. W. KENNEDY, resident engineer, State Road Commission; ERNEST L. BRADLEY, superintendent of Harry Hatfield & Co., Barboursville, W. Va.; back row, J. C. COBB, associate highway engineer, Public Roads Administration; WILLIAM BREWSTER, senior engineer, Public Roads Administration; and ORVILLE E. JONES, office engineer in the department of construction of dist. No. 1, State Road Commission.

Above: How wastes from the War Department's Charlestown, Ind. smokeless powder plant will affect the quality of Ohio River water and thus the water supply of the city of Louisville was a question uppermost in the mind of F. C. DUGAN, chief sanitary engineer of the Kentucky State Board of Health, when this snapshot was taken recently. Mr. Dugan reports that the U. S. Public Health Service will send a mobile laboratory to the Louisville area to study the effects.

Above: R. S. CALLAND (left) and NELSON B. HUNT, acting supervising engineer and office engineer, respectively, Central Valley Project, U. S. Bureau of Reclamation, have charge of work in an extensive development centering around Shasta and Friant Dams. These two great structures at opposite ends of California's Central Valley are both well along in the concrete pouring stage. Shasta Dam is scheduled for completion in 1944 and Friant Dam in 1943.

Just to show that he knows how it is done, HARRY ROMMEL, superintendent for the George H. Rommel Co., Louisville, Ky., on a $1,300,000 warehouse project at the Jeffersonville, Ind., Quartermaster Depot, lends a hand by taking charge of a buggy. However, his men were not needing his help for they were way ahead of schedule or after seven months of work with an average crew of 350 men, about to complete the 14 warehouses providing nearly 14 acres of floor space.



Left: Local papers made big news recently out of the fact that HOLTON D. ROBINSON, senior member of the consulting engineering firm of Robinson & Steinman, walked from shore to shore of the Tacoma Narrows over one of the cables of the wrecked suspension bridge there. They were right. It was news. Mr. Robinson is 78 yr. old, the cables are only 17 in. in diam., and the hand ropes were missing over parts of the main span.

OPM forbids hoarding of essential metals

Users must furnish sworn statement monthly to supplier of amount of metal on hand beginning June 10.

Users of iron and steel products, copper, non-ferrous alloys, and eleven other metals less commonly used in construction are forbidden by the Office of Production Management to accumulate inventories greater than "the quantities necessary on the basis of (the users) method and rate of operation efficiently to meet required deliveries." For the present this is being enforced by requiring that every buyer of the metals in question furnish a sworn statement monthly to his supplier certifying that he is holding his inventories within the required limits.

Metals subject to the new inventory control are as follows: cadmium, chromium, cobalt, copper, ferrous alloys, iridium, iron and steel products, lead, manganese, mercury, molybdenum, nonferrous alloys, tin, vanadium.

All of these metals have also been added to the priorities critical list. This means that defense users now automatically get compulsory preference in deliveries. Although no priority ratings have been assigned to construction contracts, contractors doing defense work can get priority ratings on their orders for items on the critical list; the rating is obtained by applying to the Army or Navy officer in charge of the job.

First affidavits are required to be sent to suppliers by June 10 and monthly thereafter. The June affidavit must be sent by everyone who has bought any of the inventory-controlled items during the preceding month or intends to buy any during the following month. No deliveries of metal will be made in the absence of such an affidavit. The affidavit, an executed copy of which must also be sent to the Director of Priorities, Office of Production Management, Washington, D. C., need not be on a special form but must follow a prescribed wording as follows:

The undersigned being duly sworn, deposes and says:

(1) That he is the officer, partner, or proprietor of the above-named Customer authorized to execute this statement on behalf of said Customer.

(2) That he executes this statement on behalf of, and by authority of, said Customer.

(3) That the materials specified in said General Metals Order No. 1 of the Director of Priorities, dated May 1, 1941, which are used by said Customer are as follows:

(4) That said Customer has received no deliveries from any Supplier (as defined in said Order) of any of the materials specified in said Order, during the calendar month preceding the date of this statement, which effected an increase in the inventories in the hands of said Customer of any such materials, in the forms purchased or in other forms then purchased, over the quantities necessary on the basis of said Customer's method and rate of operation, efficiently to meet required deliveries of said Customer.

• • •

Fort Riley to be finished well ahead of schedule

Since start of work last Nov. 9, the Fort Riley-Camp Funston job has never fallen behind schedule, and the contractors will finish up well ahead of the designated completion date, June 1. The Fort Riley area stretches for 9 miles along the Kansas and Republican Rivers, and 6 miles of levee have been built to protect the new camp grounds from floods. At the permanent cavalry post 16 new buildings have been erected for a service school. To the east, at old Camp Whitside, is the new hospital and warehouse group of 52 buildings. Further east old Camp Funston has been revived with the construction of 368 buildings. On the south side of the Kansas River a new military airport, Marshall Field, has been established. At Republican Flats, west of the Fort, a cavalry replacement center of 278 buildings has been set up.

Lieut.-Col. Joe S. Underwood is constructing quartermaster in charge. Widmer Engineering Co., St. Louis, are engineers; E. H. Oechsle is resident director for Long-Manhattan-Watson. S. F. Ditmars is coordinator, J. C. Long is director of buildings, and M. W. Watson is director of utilities.

• • •

Coast defense work in Mexico costs $14,300,000

Authorization to invest $14,300,000 this year in preliminary port military defense works at strategic points along the coasts of Mexico has been granted the ministry of national defense. Plans for these works are being developed by the ministry, General Pablo Macias, secretary, and the activities are to start within 90 days. The works will be directed by Mexican military engineers and performed by Mexican labor.

Ports that are to receive first attention in this program are at Tampico and Alvaro Obregon, on the Gulf of Mexico coast, and Manzanillo and Mazatlan, on the Pacific seaboard. This will be the greatest investment the Mexican government has ever made in port military defense works.

A sign on every job—so the public may know

When a construction job is being done by a member of the Associated General Contractors of Missouri, the public will certainly know it, for all such projects are to be publicized by signs, similar to the one shown here, posted in conspicuous places. The signs are heavy sheet metal, 3x5 ft., inside a strong frame. They are made up in quantity, with the contractor's name left blank, which is painted in when the signs are requisitioned by a member.

The signs, stressing the fact that the job is being built by the contract system, are furnished free to members by the association. They are to be used wherever a member has a job, both within and outside of the state. This plan is part of the publicity and educational program being carried out by E. C. L. Wagner, manager of the Missouri branch of the A.G.C. and his publicity committee, headed by Morris E. DeWitt.

MEN AND JOBS

HAROLD R. HENDERSON, of Marshall, Tex., highway engineer of Harrison County for six years, is resigning effective May 15 to become superintendent of C. F. Gorman & Co., road contractors. No successor to Mr. Henderson has been selected.

BRIG.-GEN. EDWIN H. MARKS, former Ohio River division engineer, left Cincinnati April 29 to take up his new duties of training enlisted men in engineer corps work at Fort Belvoir, Va. His successor will be COL. CHARLES L. HALL of Princeton, N. J., who was Cincinnati district engineer in 1936 and 1937.

PAUL SUCKOW, who has been with the Skamania County engineer's office at Stevenson, Wash., for the past year, has recently resigned to accept a position with the Tom Benson Glass Co. of Portland, Ore.

JOHN A. BREEN has been appointed acting regional federal housing coordinator for Region 1, comprising all of the New England States, it was announced May 1 by C. F. PALMER, coordinator of defense housing in the Office for Emergency Management. Mr. Breen is chairman of the Boston Housing Authority and has been purchasing agent for the city of Boston as well as being a member of the Board of Zoning Adjustment. JUSTIN HARTZOG, who has been acting regional coordinator for this area, will become a special consultant to the coordinator on city planning.

C. C. MOFFATT, recently in charge of soils at the Mississippi highway department laboratories, is now an instructor in military science, Coast Artillery Unit, at State College, Miss., with the rank of first lieutenant.

FRANCIS H. CONNERS of Zanesville, Ohio, has been appointed area engineer for Area Five of the National Youth Administration in Zanesville. Mr. Conners received an engineering degree from Ohio State University in 1933.

PAUL N. HOWARD, general superintendent for Blythe Bros. Co., Charlotte, N. C., has been designated as general superintendent in charge of the $13,000,000 marine base near Jacksonville, N. C.

MAJ. D. A. A. OGDEN, army engineer and formerly chief of construction at Fort Peck Dam, is now in charge of the construction of land bases at Trinidad, Georgetown, Antigua and St. Lucia in the Caribbean Sea.

GLEN H. ALLEN, Vincennes, Ind., district highway engineer with the Indiana State Highway Department, resigned, effective May 1, to enter an engineering and contracting partnership with J. L. WILSON of Bloomfield, Ind. The firm will be known as Allen & Wilson, with general headquarters at Vincennes.

J. ARCHER TURNER, formerly executive vice president of the Turner Construction Co., New York, one of the leading contracting organizations of the country, will succeed his brother, H. C. Turner, founder of the business, as president of the company. The retiring president has been elected to the newly created position of chairman of the board of directors and will continue to be actively identified with company affairs. The new president is a graduate of Swarthmore College in civil engineering and has been identified exclusively with the building industry for the past 35 years. In 1919 he became general superintendent for the Philadelphia territory of the company; in 1931 he was elected a director and vice president in charge of the Philadelphia office, continuing until 1937, when he was assigned to the main office in New York.

J. A. Turner

A. P. HUNDLEY, formerly assistant county engineer of Dallas, Tex., who recently resigned to enter private practice, has been appointed construction engineer in the Panama Canal Zone, where he will work on lock and dam construction.

W. VINCENT BARRY, city engineer and acting director of public works of New Haven, Conn., who was scheduled to report for active army duty, has been deferred following a request by Mayor John W. Murphy, who pointed out that Mr. Barry, who is also president of the Connecticut Society of Civil Engineers, was needed to fill important and highly technical positions for the city.

HENRY F. VAUGHAN has recently given up his title of commissioner of health for Detroit, Mich., to take up new duties as professor in the school of public health of the University of Michigan. Dr. Vaughan has been a member of the Detroit Health Department for 27 years, and became a commissioner in 1919. He was educated at the University of Michigan, and served in the Sanitary Corps at Camp Upton in the World War. Dr. Vaughan has also served as president of the American Public Health Association, trustee of the Kellogg Foundation at Battle Creek, and has been on the faculties of Wayne University, Vanderbilt University, and the University of Michigan.

COL. L. C. HALL of Washington has become division engineer of the U. S. Engineer Corps at Pittsburgh in charge of the Ohio River division, relieving COL. L. D. WORSHAM, who was acting division engineer and is being transferred to Mobile, Ala.

ROBERT BEHRNS of Linton, Ind., for several years a construction engineer for the Indiana State Highway Department, has been named assistant engineer of construction in the department, succeeding CHARLES F. HUNNEL, who has been called to army service.

The Pennsylvania department of highways has announced the following appointments to its engineering staff: JOHN E. HICKMAN, of Reading, as senior resident engineer, with headquarters at Harrisburg; JAMES H. CALDWELL of Bethlehem, resident engineer at Allentown, District 5; HARRY E. STEINMETZ, of Philadelphia, resident engineer, at Ardmore, District 6; RAYMOND R. HINKLE, of Indiana, and PHILIP B. BOUDE, of Camp Hill, both as resident engineers, to be stationed at Harrisburg, District 8; WILLIAM P. COVENEY, of Altoona, project engineer, at Hollidaysburg, District 9; ED. N. DOAK, of Washington, Pa., resident engineer, at Uniontown, District 12.

The following transfers are effective in the Civil Engineering Corps of the U. S. Naval Reserves:

LT. FREDERICK T. EBERSOLE, San Francisco, Calif., has been ordered to active duty at the Navy Yard, Mare Island, Calif.

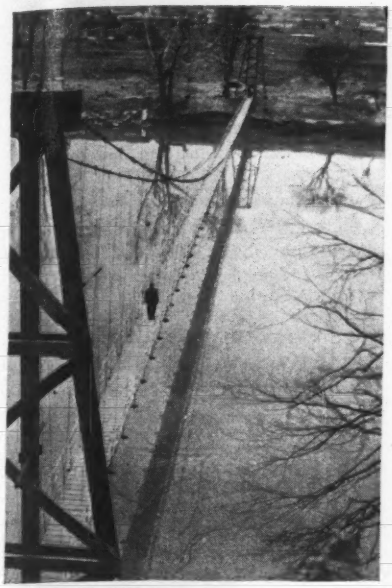
LT. BAIRD M. FRENCH, Wapiti, Wyo., has been ordered to active duty in the Bureau of Yards & Docks, Navy Dept.

LT. GEORGE L. GRAY, Allentown, Pa., has been ordered to active duty at the Navy Yard, New York, N. Y.

LT. STEPHEN A. HERRICK, Berkeley, Calif., has been ordered to active duty at the Navy Yard, Mare Island, Calif.

LT. HARVEY W. HILLYARD, Denver, Colo., has been ordered to active duty at the Naval Air Station, Pensacola, Fla.

LT. RICHARD G. HON, Stockton, Calif., has been ordered to active duty at Headquarters, 11th Naval Dist., San Diego, Calif.



Suspension bridge at Radford Ordnance Works

Among other problems confronting the contractors on the Radford Ordnance Works, Radford, Va., being built for the War Department, was that of providing a crossing for workers over New River which divides the site.

The contractors erected a suspension bridge, here illustrated, as a temporary walkway until such time as a permanent highway structure could be built. The bridge is 550 ft. long with wire rope cables, and a wood plank walk 3 ft. wide.

The $44,000,000 ordnance project is being built, and will be operated, by Hercules Powder Co., on a contract from the government, while Mason & Hanger Co., New York, N. Y., has the general construction contract.

San Francisco-Oakland Bay Bridge rail traffic study

Announcement has been made that H. G. Weeks, Los Angeles transportation engineer, has been appointed to make a study of the San Francisco-Oakland Bay Bridge rail traffic.

The survey will be made with a view to protecting the state's interests which have been jeopardized by partial abandonment of service by the Interurban Electric Co. and the pending application of the Sacramento Northern Railway for permission to discontinue service on the bridge.

The chief duty of engineer H. G. Weeks will be to determine what effect the abandonment of railway service and possible substitution of bus service by the Key System will have upon bridge revenues. Mr. Weeks also will recommend whether it is advisable for the state to take over operation of all or part of the interurban transportation between San Francisco and East Bay cities.

JOBS OF THE WEEK

MILL BUILDING, Alabama City, Ala.
Daniel Construction Co., Anderson, S. C., will construct mill addition, for Dwight Manufacturing Co. Cost including equipment will be $3,000,000. J. E. Sirrine & Co., Greenville, S. C., is engineer.

SYNTHETIC RUBBER PLANT, Louisville, Ky.
E. I. Du Pont de Nemours & Co., Wilmington, Del., will construct with own forces plant to manufacture neoprene synthetic rubber. Estimated cost $10,000,000.

PLEASURE PIER, Galveston, Tex.
City of Galveston, awarded contract constructing 1,300 ft. x 102 ft. pleasure pier, including theatre, exhibition hall, fishing pier to Kansas City Bridge Co., Kansas City, Mo. Cost will be $1,287,500. Robert J. Cummins, Houston, Tex., consulting engineer. R. R. Rapp, Galveston, is constructing architect.

QUARTERS, Boston, Mass.
Bureau of Yards and Docks, Navy Department, Washington, D. C., has awarded additional contract to Sawyer Construction Co., Boston, Mass., for extending marine quarters and building Number 195, at $1,140,000. Contract cleared through office of Production Management.

SEAPLANE RAMP, Trinidad and British Guiana
James Stewart & Associates, New York, N. Y., has been awarded a supplementary contract for constructing creosoted timber seaplane ramp at Naval Air Station British Guiana; also for equipment for advanced base for one squadron of patrol planes at Trinidad. Cost will be $1,200,000 on fixed fee basis. James Stewart & Associates, includes James Stewart & Co., H. J. Deutschbein Co., Inc., and Peter F. Connolly Co.

PLANT, Corpus Christi, Tex.
American Smelting & Refining Co., New York, N. Y., will construct by own forces smelting plant. Estimated cost will be $5,200,000. R. E. Thomas, Perth Amboy, N. J., is engineer.

FLOOD CONTROL DAM, Somerfield, Pa.
Hunkin Conkey Construction Co., Cleveland, O., was lowest bidder constructing flood control dam on Youghiogheny River embankment and spillway, for U. S. Engineers, Pittsburgh, at $3,675,265. The U. S. Engineers, Pittsburgh, took bids May 2. The entire project will cost $9,000,000.

TEMPORARY BUILDINGS, Las Vegas, Nev.
R. G. Merrill, Helena, Mont., has been awarded contract for constructing temporary buildings at Las Vegas Airport, by U. S. Engineers, Los Angeles, $1,226,330.

REPLACEMENT CENTER, Jefferson Barracks, Mo.
U. S. Engineers, St. Louis, Mo., awarded contract for 6,000 man cantonment, 96 barracks, 26 recreation buildings, 12 storehouses, 6 administration buildings, fire station, guard house, post exchange, infirmary, theatre, to J. A. Bass Co., Minneapolis, Minn., $1,112,600; also 2 administration buildings, fire house, guard house, post exchange, infirmary, mess hall, to Evans Construction Co., Springfield, Ill., $254,770; 38 buildings for hospital group to O'Driscoll & Grove, Inc., New York, N. Y. $690,254.

HOUSING, Paterson, N. J.
Edward M. Johnson, Jersey City, N. J., will build three hundred units defense housing in East Paterson for Public Buildings Administration, Washington, D. C. Cost will be $1,021,000 on cost plus basis.

PLANT, Kenosha, Wis.
Austin Company, Cleveland, O. will construct factory to make ammunition brass cups for American Brass Co., Kenosha, Wis. and Waterbury, Conn. Estimated cost with equipment $4,750,000. Defense plant Corp. will finance in lease agreement with War, Navy and RFC.

POWER PLANT, Mobile, Ala. ...
J. G. White Engineering Corp., New York, N. Y. will design and construct steam power plant for Aluminum Ore Co., Mobile, Ala. Estimated cost $2,000,000-$3,000,000.

AIRFIELD BUILDINGS, Mather Field, Calif.
F. J. Twaits Co., Los Angeles, Calif., has been awarded contract for the construction of one hundred seventy army air field buildings, for U. S. Engineers, Sacramento, $1,311,015. Same contractor also received a supplementary contract for forty navigation school buildings at Mather Field at an estimated cost of $400,000.

NOTE—Additional bidding and contract news on over 800 projects large and small appear in the Construction News section beginning on page 14.

OBITUARY

COL. R. S. THOMAS, 58, chief engineer of the Second Army, under present mobilization with headquarters in Memphis, Tenn., died May 11. He was a native of Tennessee. Col. Thomas' last big engineering job was the construction of the $10,000,000 national airport at Washington, D. C. He also was engineer of the Kole Kole hydro-electric dam in Hawaii. He had a distinguished record during the World War. Colonel Thomas was graduated from the United States Military Academy at West Point in 1904.

JOSEPH GOODMAN, commissioner of water supply, gas and electricity of New York City, died May 9 at New York. Mr. Goodman was appointed commissioner in 1936, and at the time of his death was a member of New York City's defense council. He attended the College of the City of New York and in 1898 received his civil engineering degree from the School of Mines of Columbia University. Mr. Goodman was a Hungarian by birth and was 65 years old.

MARK WILMARTH, 87, retired civil engineer, who was in charge of the construction of the Custom House Tower in Boston and the Government Printing Office and War College at Washington, D. C., died at Northampton, Mass. on May 6. Mr. Wilmarth was head of the Boston street department for nine years, served as chief engineer of the board of control and supervisor of construction of the Boston subways. He was a graduate of Worcester Polytechnic Institute.

HENRY FRANK EICHENBERGER, 46, a civil engineer, died on May 3 at North Little Rock, Ark.

FERDINAND TAUSZ, 61, a structural engineer for the H. K. Ferguson Co., died recently at Cleveland, Ohio.

PHILLIP J. GOODWIN, 57, chief engineer of the West Virginia State Board of Control, died recently at Charleston, W. Va.

HARRY TIPPER, 61, former construction engineer, died May 7 at Lafayette, Ind. Mr. Tipper between 1897 and 1906 was actively engaged in construction work on New York subways.

CHARLES ARTHUR KING, 58, consulting engineer, died May 6 at Plainfield, N. J. Mr. King was employed by the firm of Meyer, Strong & Jones, of New York.

RAYMOND A. PEASE, 52, engineer at Minot, N. D., died recently. He was formerly an engineer for the state highway department and for several years a resident engineer for Public Works Administration.

GEORGE FRANCOIS DUTEL, 70, who served with the Royal Engineers of the British Army during the World War, died May 6 at Freeport, L. I.

F. SWINDELL KLUTTZ, resident engineer with the North Carolina State Highway and Public Works Commission, died at Raleigh, N. C. on May 3. Mr. Kluttz had been employed by the commission for 20 years.

JOHN D. O'CONNOR, 49, chief engineer for the Canadian Gulf Steamship Lines, died May 5 at Galveston, Texas.

ALBERT WISEMAN, 57, retired railroad bridge contractor, died May 4 at Lancaster, Ohio.

JOHN D. MARR, 61, president of the Daniel Marr & Son Co., Boston steel construction organization and builder of various stadia and athletic establishments, died at Boston on May 4.

ODIN F. NASS, retired engineer and structural steel contractor, died recently at Philadelphia, Pa.

JOHN W. PICKLER, contractor, Pine Bluff, N. C., was killed recently in an automobile accident near Aberdeen, N. C.

CONTRACTS AND CAPITAL

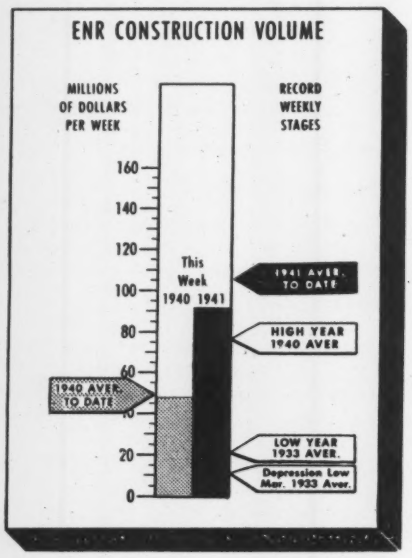
LED BY THE 1941 industrial building high, engineering construction awards for the week reached $94,991,000, an increase of 103 percent over the corresponding week last year, and 31 percent higher than last week's volume.

The increase in industrial building brings private awards for the week to a peak 70 percent above a year ago, and 52 percent higher than a week ago. Public construction is up 130 percent compared with last year, and 22 percent higher than last week.

Engineering construction for the year to date, $2,129,468,000, is 110 percent above the corresponding period last year. Private awards, $591,279,000, are up 65 percent compared with the 20-week total of a year ago. Public construction exceeds the 1940 period by 135 percent, as a result of the 777 percent gain in federal work.

Five large contract awards for industrial buildings, two each in Texas and Alabama, and one in Kentucky, accounted for 85 percent of the year's record total, $25,510,000. In addition to industrial buildings, gains over last week are in bridges, public buildings, and unclassified construction; and increases over the 1940 week are in waterworks, bridges, commercial and public buildings, and unclassified.

New capital for construction purposes for the week totals $14,271,000. This is 81 percent below the volume for the 1940 week. The current week's financing is made up of $9,029,000 in USHA loans, $4,316,000 in state and municipal bonds, $686,000 in RFC loans for public improvements, and $240,000 in corporate security issues.



CONTRACTS

(Thousands of dollars)

	Week Ending May 16 1940	May 8 1941	May 15 1941
Federal	$4,072	$24,391	$35,766
State & Municipal	21,914	24,577	23,838
Total public	$25,986	$48,968	$59,604
Total private	20,754	23,273	35,387
TOTALS	$46,740	$72,241	$94,991
Cumulative 1941 (20 weeks)			$2,129,468
Cumulative 1940 (20 weeks)			$1,014,421

Note: Minimum size-projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1940 20 weeks	1941 20 weeks
NON-FEDERAL	$478,725	$362,002
Corp. Securities	74,144	109,202
State & Mun.	320,639	203,021
U.S.H.A. loans	78,430	22,550
R.F.C. loans	5,512	27,229
FEDERAL		$2,868,837
TOTAL CAPITAL	$478,725	$3,230,839

FHA MORTGAGES

	Week Ending May 11 1940	May 3 1941	May 10 1941
Selected for appraisal	$29,548	$33,696	$34,156*
Cumulative 1941 (19 weeks)			$520,823*
Cumulative 1940 (19 weeks)			$444,579*

* Subject to revision.

ENR INDEX NUMBERS

Index Base=100		1913	1926
Construction Cost	May '41	255.55	122.84
Building Cost	May '41	209.24	113.11
Volume	Apr.'41	322	141

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

SPILLWAY AND EMBANKMENT BLUE MOUNTAIN DAM, ARK.

OWNER: U. S. Engineer Office, Little Rock, Ark.

PROJECT: Constructing a rolled-fill earth dam, concrete spillway, and rolled-fill earth dikes, located on the Petit Jean River, near Waveland, Ark. Earth dam to be approximately 2,800-ft. long with average height above valley floor of 80-ft. Concrete-lined spillway in low saddle in left abutment. Wing dikes connecting spillway to dam and higher ground on each side.

CONDITIONS: Contractor to furnish all materials and complete work in 700 calendar days. Rail and highway transportation facilities are available. Work to be carried on without interference to contractors on other jobs under way. Absorptive form lining to be used on wooden forms on exterior and exposed concrete surfaces. Wage rates specified are: skilled labor, $1.00 to $1.50 per hr.; semi-skilled, 40 to 75c.; and common labor, 30 to 50c.

BIDS: Ten bids were received April 30, 1941, ranging from the contract low of $1,111,879 to $2,057,283. Engineer's estimate, $1,243,172.

LIST OF BIDDERS:

1. Myers, Myers & Goen, Salem, Ind. (contract) $1,111,879
2. Southern Contracting & Engineering Co., Memphis, Tenn. 1,221,558
3. S. J. Groves & Sons Co., and Lundin Bros., Minneapolis and Mankato, Minn. 1,228,899
4. Atlas Constr. Co., and Oran Speer, Waxahachie, Tex. 1,248,718
5. S. E. Evans, Fort Smith, Ark. 1,287,846
6. Mittry Bros. Constr. Co., Los Angeles, Calif. 1,337,746
7. United Constr. Co., and Porter-DeWitt Constr. Co., Winona, Minn. 1,421,159
8. John Kerns Constr. Co., Omaha, Nebr. 1,458,345
9. Morrison-Knudsen Co., Inc., Boise, Idaho 1,513,527
10. Michael Pontarelli & Sons, Chicago, Ill. 2,057,283

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Care and diversion of river	L.S.	$40,000.00	$60,000.00	$25,000.00
2. Stripping, embankment and dikes	75,000 c. y.	.28	.20	.30
3. Common excavation, general	243,000 c. y.	.28	.29	.30
4. Common excav., borrow areas	1,528,000 c. y.	.28	.28	.25
5. Rock excavation, general	27,000 c. y.	.80	.80	1.00
6. Rock excavation, trenches	650 c. y.	5.00	10.00	10.00
7. Drill and blast, Area A	L.S.	7,500.00	9,000.00	10,000.00
8. Close line drilling	12,500 s. f.	.50	.75	.80
9. Drilling 3-in. holes	3,000 l. f.	.50	1.00	.50
10. Core drilling 3-in. holes	2,500 l. f.	1.50	3.00	3.00
11. Pressure grouting	4,000 c. f.	1.00	1.50	2.00
12. Foundation preparation	700 sq.	7.50	10.00	1.00
13. Protect. treatment for shale	700 sq.	5.00	4.50	5.00
14. Bituminous cover for shale	150 sq.	4.00	2.00	5.00
15. Settlement gages and seepage walls	L.S.	580.00	1,800.00	6,000.00
16. Backfill	9,500 c. y.	.40	1.00	.80
17. Selected and random imperv. fill	1,290,000 c. y.	.04	.05	.06
18. Random pervious fill	208,000 c. y.	.04	.04	.06
19. Rolling, each add'l. pass; sheep's-foot roller	150,000 sq.	.005	.01	.02
20. Rolling, each add'l. pass; tractor	14,000 sq.	.005	.01	.03
21. Sand — drain and backing	37,000 c. y.	2.50	2.85	3.00
22. Rock gutters	500 c. y.	4.75	10.00	18.00
23. Crushed rock or gravel	9,900 c. y.	1.50	3.00	2.50
24. Gravel surfacing, roadways	2,500 c. y.	1.90	2.50	2.50
25. Dumped riprap	66,000 c. y.	2.00	2.00	1.85
26. Furnishing cement	13,500 bbl.	2.60	2.75	2.75
27. Concrete, spillway walls	4,200 c. y.	10.65	13.00	18.00
28. Concrete, bridge (above El. 415.0)	550 c. y.	14.00	19.00	30.00
29. Conc.—weir, bridge, footings, floor and cut-off wall	5,400 c. y.	8.35	10.50	12.00
30. 6-in. perforated conc. pipe	660 l. f.	.90	.90	1.00
31. 8-in. perforated conc. pipe	900 l. f.	1.00	1.25	1.50
32. 18-in. perforated conc. pipe	1,700 l. f.	2.00	2.25	2.50
33. Manholes	3 ea.	300.00	200.00	100.00
34. Copper water stops	5,600 lb.	.55	.50	.60
35. Setting anchors	290 ea.	2.50	1.50	2.00
36. Reinforcing steel	710,000 lb.	.05	.046	.06
37. Black steel pipe	980 lb.	.15	.30	.20
38. Highway posts	520 ea.	1.75	2.00	2.00
39. Highway guardrail	1,520 l. f.	.90	.75	1.15
40. Topsoil	9,800 c. y.	.30	.40	1.50
41. Spot sodding	5,300 sq.	.40	.35	.80
42. Water supply system for Gov't. field office	L.S.	1,000.00	1,500.00	2,000.00

AIRPORT IMPROVEMENT FARGO, N. D.

OWNER: U. S. Engineer Office, St. Paul, Minn., for Civil Aeronautics Administration.

PROJECT: Improvement of Fargo Municipal Airport about one mile northwest of Fargo, N. D., on U. S. Highway 81. Includes construction and paving of runways, concrete apron, drainage, and appurtenant work. Runways to be built are northwest-southeast, and north-south units, each 5,000-ft. long, consisting of base courses of compacted moisture controlled stabilized fill; 300-ft. wide at base; and a 6-in. soil-cement subsurface course 100-ft. wide with a semi-hot plant mix bituminous surface course of 1-in. minimum thickness. Concrete apron consists of 6-in. concrete pavement over compacted moisture controlled stabilized gravel base course. Drainage consists of airport type surface drains, subsurface drains, manholes and catch-basins.

CONDITIONS: Contractor to furnish all materials and complete work in 170 calendar days. Airport now in operation and will be in use continuously during construction period. Portions of new runways will be opened to airplane traffic upon completion of soil-cement course before application of bituminous surfacing. Highway facilities available, but due to congestion of traffic, routes to be used will be subject to approval of city, county or state agencies. Wage rates specified are: skilled labor, $1.00 to $1.50 per hr.; semi-skilled, 60c. to $1.00; and common, 60c.

BIDS: Ten bids were opened April 24, 1941, ranging from the contract low of $311,200 to $606,007.

LIST OF BIDDERS:

1. McCree & Co., St. Paul, Minn. (contract) $311,200
2. S. J. Groves & Sons Co., Minneapolis, Minn. 325,544
3. McKenzie Brothers, Minneapolis, Minn. 336,964
4. Northwestern Engineering Co., Rapid City, S. D. 383,914
5. Northern Improvement Co., Fargo, N. D. 426,776
6. Albert Lalonde Co., Sidney, Mont. 444,141
7. Haggart Constr. Co., Fargo, N. D., and W. H. Noel Co., Jamestown, N. D. 512,667
8. Megarry Bros., St. Cloud, Minn. 547,426
9. S. Birch & Sons Constr. Co., Fargo, N. D. 592,753
10. Jay W. Craig Co., Minneapolis, Minn. 606,007

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excavation	28,900 c. y.	$0.35	$0.40	$0.60
2. Fill; earth	3,500 c. y.	.10	.10	.06
3. Sub-base compaction	13,330 c. y.	.10	.10	.10
4. Base course, Lift A	104,160 c. y.	1.00	1.10	1.15
5. Base course, Lift B	37,820 c. y.	1.20	1.25	1.25
6. Base course, soil-cement	19,100 c. y.	1.80	1.90	1.40
7. Cement, for soil-cement	10,320 bbl.	3.00	2.61	2.68
8. Prime coat, bituminous	68,970 gal.	.115	.10	.12
9. Wearing course	5,730 ton	3.45	4.00	6.00
10. Seal coat; bituminous	22,910 gal.	.09	.10	.12
11. Seal coat; cover aggregate	470 c. y.	1.78	2.00	.90
12. Pavement; concrete	4,560 s. y.	4.50	2.49	2.50
13. 8-in. corr. met. pipe; excav., bkfill	160 l. f.	1.10	2.00	1.25
14. 10-in. corr. met. pipe; excav., bkfill	420 l. f.	1.50	2.10	1.35
15. 12-in. corr. met. pipe; excav., bkfill	400 l. f.	1.60	2.20	1.50
16. 15-in. corr. met. pipe; excav., bkfill	330 l. f.	1.85	2.50	1.80
17. 18-in. corr. met. pipe; excav., bkfill	900 l. f.	2.30	3.00	1.90
18. 8-in. surf. drains; incl. c.m. pipe, excav. and backfill	6,150 l. f.	1.50	2.00	2.00
19. 10-in., as above	3,440 l. f.	1.65	2.00	2.20
20. 12-in., as above	1,270 l. f.	2.00	2.25	2.30
21. 18-in., as above	180 l. f.	2.70	3.00	2.95
22. 21-in., as above	430 l. f.	3.00	3.25	3.30
23. Corr. met. pipe perf., subsurf. drains	330 l. f.	3.00	2.20	1.95
24. Vitr. clay tile subsurface drains	1,520 l. f.	.75	2.00	.90
25. Electrical conduit	3,935 l. f.	1.20	.95	.85
26. Additions to existing drains	8,060 l. f.	.20	.60	.50
27. Manholes and catch basins	L.S.	1,591.95	900.00	1,600.00

CONSTRUCTION REPORTS

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, Manager *SCOTT McLEOD, Statistician*
(Daily service also available—Write for details)

Location of ENR Correspondents

Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger; water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Named in order of Listing)

Water Supply	Unclassified
Sewers, Waste Disposal	Latin America
Bridges, Grade Cross'gs	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads):

BIDS ASKED (new announcements only For full calendar, see also preceding issues of ENR);

LOW BIDDERS: All low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

WATER SUPPLY

PROPOSED WORK

Calif., San Miguel—Surveys to determine cost water sys. Over $15,000. Will seek federal aid.

★**Conn., Waterbury**—Street, Sewer and Water Dpt., 114 Benedict St., plans ready in July 36 and 42 in. conduits, water sys., high pressure pipeline and reservoir. $2,000,000. CD 3/13—ENR 3/20.

Illinois — Northern Illinois Water Corp., Reading, present property and facilities addn., additional filter equip., water storage capacity for service in and about **Streator, Sterling and** Rock Falls. **$36,000.**

Ill., West Frankfort—Waterpipe line from city to a Benton Co. lake for emergency supply water.

Ind., Columbus—Bd. P. Wks., City Hall, bids soon, WW imprvs., installing meter service on water sys. $39,000.

Ind., St. Johns—J. F. Scheidt, pres., Town Bd., Town Hall, bids soon, WW and distr. sys., deep well, turbine type pump, 60,000 gal. elevated steel tank, hydrants, etc. $30,000.

N. C., Elkin—J. R. Poindexter, mayor voted $60,000 bonds, water service exten., filtration plant imprvs. $105,000. WPA. CD 4/16—ENR 4/24.

Pa., New Castle—New Castle Water Co., New Castle, extend. watermains to East New Castle, incl. fire hydrants, etc. $20,000.

Pa., Waterford — Purchasing, expanding facilities Waterford Water Supply Co. Over $15,000. Chester Engineers, 210 E. Parkway, Pittsburgh, engrs.

Pa., York—York Water Co., York, exten. c.i. watermains, service connections, fire hydrants, etc. at site 350 unit housing project, 14 Ward. $15,000.

Tex., Cuero—Water lines, facilities for Airfield unit, $15,000 bonds voted, C. E. Miles, Cuero, engr.

Tex., San Antonio—San Antonio Water Bd., 108 W. Market St., San Antonio, 8 to 16-in. c.i. watermains in extens., replacements, $100,000.

Alta., Edmonton—Municipality, water supply facilities to new housing development, Hudson Bay reserve, near Queen Mary Park. $75,000. A. W. Haddow, City Hall, engr.

B. C., Port Alberni—Municipality, WW. sys. imprvs. $16,250. H. S. Fowlie, Box 488, engr.

Ont., Kingston—Gore & Storrie, engrs, 1130 Bay St., Toronto, bids soon imprv. water pump. sta., purchasing 2 gas driven pumps, for City. $30,000.

Que., Mount Royal (P. O. Montreal)—Municipality, c/o E. Ravel, clk., watermain exten. $20,000. W. R. J. MacNeil, Town Hall, engr.

BIDS ASKED

Bids Asked May 19

†**La., Alexandria**—Con. Q.M., Camp Livingston, casing, drilling, testing 2 or more deep water wells, Camp Livingston; adv. ENR 5/15.

Bids Asked May 22

†**La., Alexandria**—Con. Q.M., Alexandria, installation, completion insulation covering of pipes and hot water tanks, in buildings, Camp Livingston, Camp Beauregard and Beauregard airport; adv. END 5/15.

Bids Asked May 26

Tex., Wichita Falls—W. E. Fitzgerald, mayor, WW imprvs., elevated water tank, filter equip. sludge removal equip., pumps, motors. J. E. Ward, Harvey-Snider Bldg., engr.

Wis., Colby—C. Holtzhausen, clk., water softening and iron removal plant. F. J. Davy & Son, 502 Main St., LaCrosse, engrs.

Bids Asked May 27

Conn., Danbury—Office City Clk., City Hall, c/o T. J. Bowen, secy. Danbury Water Works Imprvt. Comn., addns., alterations water filtration plants. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs.

Que., Quebec City—City Clerk, watermains under St. Charles River, replacing aqueduct bridge. $340,000. E. Hamel, City Hall, engr. CD 1/2—ENR 1/9 under BA.

Bids Asked June 9

Ia., LeClaire—E. H. Suiter, town clk., WW sys. $30,000. R. W. Gearhart, 349 21 St., S.E. Cedar Rapids, engr. CD 12/10—ENR 12/12.

LOW BIDDERS

†**Calif., San Bruno**—Con. Q.M., Fort Mason, San Francisco, May 6, watermains, Golden Gate National Cemetery, Inv. W-6616-41-139, from H. E. Conner and R. J. Brant, 1222 Whipple Ave., Redwood City. **$21,952.** CD 4/28.

Mass., Leominster—Water Dpt., City Hall, May 6, water filtration plant, from Jas. A. Munroe & Sons, North Attleboro. **$33,680.** CD 4/24—ENR 5/1.

†**Mich., Battle Creek**—Con. Q.M., Fort Custer, 1,200,000 gal. steel water tank, pumps and waterline, from Pittsburgh Des Moines Steel Co., 1280 1st Natl. Bank Bldg., Chicago, Ill., **$33,740.**

†**Wash., Fort Lewis**—War. Dpt., 20 St. and Constitution Ave. N.W., Wash., D. C., May 2, 2 rein.-con. reservoirs, exten. water distr. sys., from Valley Constr. Co., 8423 48 Ave. S., Seattle. **$161,179.**

CONTRACTS AWARDED

†**Fla., Valpariso**—Con. Q.M., Elgin Field, water, sewerage, electrical facilities, sidewalks, roads, fences, parking area. **WPA. $101,268.**

Minn., Red Wing—Chicago, Milwaukee, St. Paul & Pacific R.R., Union Sta., Chicago, Ill., W. H. Penfield, ch. engr., 50,000 gal. steel water tank, to Pittsburgh-Des Moines Steel Co., 1015 Tuttle St., Des Moines, Ia. **$15,000.** CD 3/13—ENR 3/20.

Neb., Seward—Elevated tank for water storage, to Omaha Steel Wks., 609 S. 48 St., Omaha, **$20,100.** Bids 5/2. CD 4/28.

N. Y., Niagara Falls—W. D. Robbins, city mgr., 7,284 lin. ft. c.i. watermain extens., replacements, own forces. Over **$25,000.** CD 4/28—ENR 5/1.

N. C., Mocksville—T. I. Caudell, mayor, water and sewer imprvs. **WPA. $31,621.** CD 12/17—ENR 10/24.

Pa., Ligonier—Rolling Rock Country Club, Ligonier, 250,000 gal. underground water reservoir, auto parking area on top, c.i. watermains, etc., day labor and separate contracts. **$15,000.** CD 4/28—ENR 5/1.

Wash., Dayton—WW sys. imprvs. **WPA. $35,380.** CD 4/16—ENR 4/24.

Wash., Shelton—Installing 25,000 ft. watermains, fittings, to Valley Constr. Co., 8423 48 Ave. S. **$23,807.** Bids 5/1. CD 4/22—ENR 4/24.

Wis., Omro—Stella Weingarten, village clk., WW sys., **WPA. $125,000.** CD 12/24—ENR 1/2.

Ont., Brampton—A. L. Paterson, municipality clk., well digging, to International Water Supply Co., Ltd., 12 Maitland St., London. Est. **$15,000.** James-Redfern & Proctor, 36 Toronto St., Toronto, engrs.

Ont., Hamilton—Dominion Govt., Ottawa, water and sewerage services, Army Trade School, to Scott-Jackson Constr. Co., Ltd., 57 Bloor St. W., Toronto. **$61,000.** Dpt. National Defense, Ottawa, Ont., engr.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Calif., Monterey — East Monterey Sanitary Dist. will organize to finance construction sewerage sys. Over $25,000.

Ill., Hanover — **Sewage** disposal plant. $50,000. Cauldwell Eng. Co., Jacksonville, engr.

Ia., Des Moines—Imprv. sewage disposal plant. $25,000. J. Tippee, city engr.

Mich., Marquette—Plans approved sewage disposal plant. $300,000. Hoad, Decker, Shoecraft & Drury, Savings Bank Bldg., Ann Arbor, engrs. CD 2/9—ENR 2/27.

Minn., Triumph and **Monterey**—Cities of Triumph and Monterey, sewage plant, sewerage sys. $50,000. F. O. Jones, Fairmont, engr.

†**N. J., Fort Dix**—War Dpt., 20 St. and Constitution Ave. N.W., Wash., D. C., sewage treatment plant alterations, addns., 2 small pump. stations, remodeling sedimentation tanks, new sludge digestion tank. $100,000. M. Pirnie, 25 W. 43 St., New York, N. Y., engr.

N. J., Plainfield—Storm sewers, Colonial Pl. and St. Nicholas Blvd. $50,000. WPA. J. H. Weitzen, South and Hobart Sts. Perth Amboy, WPA and owner's engr.

N. Y., Dunkirk—Trunk line sewer from Allegheny Ludlam steel plant to present Brigham road sewer line, etc. $25,000. A. G. Walter, city engr.

Pa., Corry—G. B. Porter, city clk., sewage disposal plant. Over $25,000. Havens & Emerson, Leader Bldg., Cleveland, O., consult. engrs. D. D. Williams, city engr. CD 10/28—ENR 10/31.

Pa., Meadville—Bond election in November, incinerating plant. $65,000. R. L. Phillips, city engr. CD 1/14—ENR 1/16.

Pa., Williamsport—Supervs. Loyalsock Twp., H. R. Burns, secy., Williamsport, sanitary and storm water sewers, Kenmar Sect. Over $30,000. B. C. Houck, Court House, engr.

Pa., York—F. H. Breneman, city councilman in charge, sanitary and storm water sewerage extens., 14 Ward, site of 35 dwelling housing project, etc. $50,000. C. F. W. Wallow, city engr.

★**Tex., Corpus Christi**—A. C. McCaughan, mayor, collecting mains in Nolte Addn. $750,000.

Wis., Fond du Lac—J. E. Murray, city clk., receiving informal bids May 20 from engineering firms on cost of survey sewage treatment plant and garbage plant.

Wis., New Richmond—Mrs. Anna Halverson, city clk., sewage disposal plant. Williams & Burlingame, Inc., 418 W. Willard St., Stillwater, Minn., engr.

Alta., Edmonton—Municipality, sewerage facilities, housing development, Hudson Bay Reserve, near Queen Mary Park. $125,000. A. W. Haddow, City Hall, engr.

Que., Mount Royal (P. O. Montreal)—Municipality, c/o E. Ravel, clk., sewers. $30,000. W. R. J. MacNeil, Town Hall, engr.

BIDS ASKED

Bids Asked May 16

N. Y., Kauneonga Lake—J. A. Fine, town clk., town of Bethel, Kauneonga Lake, sewers, sewage pump. station for Kauneonga Lake Sewer Dist. Exten. 1. Extended date; adv. ENR 5/15. CD 4/14—ENR 4/17.